

**REMARKS**

The present remarks are in response to the Office Action of February 26, 2007. Claims 1-6, 8-9, 11-19, 21-26, and 28-29 are currently pending.

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, the Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the Office Action, the following rejections were issued:

- (1) Claims 1-3, 6, 8, 11-13, and 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,214,100 (hereinafter "Parazak") in view of U.S. Pat. No. 5,889,083 (hereinafter "Zhu") and U.S. Pat. No. 6,874,881 (hereinafter "Suzuki");
- (2) Claims 4-5 and 14-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu and Suzuki, and further in view of U.S. Pat. No. 6,280,513 (hereinafter "Osumi");
- (3) Claims 9 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu and Suzuki, and further in view of U.S. Pub. No. 2002/0198287 (hereinafter "Ohta");
- (4) Claims 21-23, 26, and 28 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu;
- (5) Claims 24-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu, and further in view Osumi; and
- (6) Claim 29 was rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu, and further in view of Ohta.

Rejections under 35 U.S.C. 103(a)

Before discussing the rejections under 35 U.S.C. 103(a), it is thought proper to briefly state what is required to sustain such a rejection. The issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness by showing some motivation in a prior art reference to modify that reference, or combine that reference with multiple references, to teach all the claim limitations in the instant application. Applicants respectfully assert the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness in this rejection.

The obviousness rejections of the pending claim set based on various combinations of Parazak, Zhu, Suzuki, Osumi, and Ohta do not establish a case of *prima facie* obviousness because none of these references teach each and every claim limitation of the instant application. Further, none of the above-mentioned references teach or suggest the modification of the inks described therein to achieve a frequency printing rate that can span into the range of 15 kHz to 25 kHz (as well as be similarly printable along the entire range of 3 kHz to 25 kHz), as required by independent claims 1, 11, and 21. Because none of these references teach or suggest each and every claim limitation, Applicant respectfully requests that the obviousness rejections based on these references be withdrawn. Each rejection uses at least two of the following references: Parazak, Zhu, and Suzuki. As such, these references are briefly outlined below.

Parazak

Parazak discloses an ink-jet ink directed to ester modified macromolecular chromophores. See col. 2, lines 22-32. As noted by the Examiner, Parazak can use a combination of solvents including ethoxylated glycerol, 2-pyrrolidinone, and 1, 5-pentanediol. See col. 5, lines 36-38.

Zhu

Zhu discloses an ink-jet ink suitable for printing on non-traditional substrates such as “glass, plastic, and metal” that are “scratch and rub resistant.” See col. 1, lines 4-9. Zhu further states that “there exists a need for aqueous jet ink compositions that can meet the low VOC regulations.” Zhu accomplishes this objective by using an ink composition

comprising water, a colorant, a binder resin, and a wax. See col. 2, lines 39-40. Zhu states that the binder resin is a “film former,” see col. 4, lines 48-51; having a preferable concentration of 5% to 10% by weight. See col. 6, lines 31-43. Zhu further states that the “organic solvent is preferably used in small amounts” to accomplish the low VOC purposes; teaching a concentration below 20%, preferably 0.1% to about 10%, and more preferably about 1% to about 5%. See col. 8, lines 66-67; col. 9, lines 1-6. As noted by the Examiner, Zhu discloses the use of a styrene-maleic anhydride resin. See col. 5, lines 57-67.

#### Suzuki

Suzuki discloses an ink-jet ink suitable for high speed printing comprising water, a water soluble coloring material, a resinous dispersant, glycerin, ethylene urea, and polyoxyethylene alkyl ether. See col. 3, lines 6-17. It is worthy to note, that the glycerin and ethylene urea “are critically important components” to maintain an ink capable of such printing. See col. 5, lines 64-67. While the ink is directed to certain printing frequencies, Suzuki specifically states that the ink can achieve 5 kHz or 10 kHz but has an “upper limit” of “about 15 kHz in practice.” See col. 10, lines 32-44.

#### Claims 1-6, 8-9, and 11-19

Each of the independent claims recite that the ink is capable of printing at a frequency along the entire spectrum ranging from 3 kHz to 25 kHz. For the first three 103 rejections, the Examiner has used at least Parazak, Zhu, and Suzuki in combination to reject claims 1-6, 8-9, and 11-19. However, as noted above, Suzuki specifically teaches that the high speed printing frequency has an upper limit of about 15 kHz. As such, the combination would have no likelihood of success in producing system, method, or ink of the present invention. The Examiner has responded that Suzuki states that the drive frequency is “not limited” and that the frequency has been increased to 10 kHz or higher. However, these teachings are explicitly limited by the statement that in practice the limit is 15 kHz. In other words, the Suzuki reference must be viewed as a whole. The complete teachings of Suzuki effectively limit the frequency to 15 kHz. The statement in Suzuki that the frequency has been increased to 10 kHz or higher, and the statement that the frequency has an effective limit of 15 kHz are not inconsistent. Both can be true if

these two statements are interpreted as the Applicant has suggested. Otherwise, the Examiner is picking one statement in a reference that is “true” and another statement is being disregarded as unimportant. References must be viewed as a whole under 35 U.S.C. 103(a). As such, it is respectfully requested that all rejections that rely on Suzuki for this teaching should be withdrawn.

Additionally, the present invention requires an ink having the capability of being printed over a broad range of frequencies. The present combination clearly does not teach this ability, and therefore, each and every element of claims 1-6, 8-9, and 11-19 have not been taught. Providing an ink that is both acceptable for very low frequency printing as well as very high frequency printing is difficult to achieve, as evidenced by Suzuki which states that it is impractical to print over frequencies of about 15 kHz. As the inks of the claimed invention recite a claim element of printing throughout this entire frequency range (3 kHz to 25 kHz), and as the prior art does not teach or suggest this limitation or capability, the Applicant respectfully requests that the Examiner withdraw these rejections.

Furthermore, the present combination is improper. The Zhu reference specifically states that one objective of the invention was to limit the amount of solvents in order to comply with VOC regulations. Zhu then limits the amount of solvent to 20%, preferably 10% or more preferably 5%. The Examiner has combined three references to show all the elements of the present invention; however, such a combination would destroy the purpose of Zhu by using a solvent combination in excess of the required or desired amounts taught by Zhu. Suzuki specifically states that for high speed printing, the glycerin and ethylene urea are critically important, so any combination seeking to achieve high speed printing, following the teachings of Suzuki, would necessarily need to have these two organic solvents. These organic solvents would be in addition to the cosolvent combination disclosed by Parazak and required by the present claims. As such, the combination would contain a minimum of 5 solvents. The disclosed amounts of these solvents vary, but the Examples of Parazak and Suzuki show that the solvents range from about 16% to 23% and about 10% to 20%, respectively. Thus, this combination could be construed to require a solvent range of about 26% to 43%, which is clearly outside of the teachings of Zhu. In fact, Zhu teaches away from using anything but “small amounts” of solvents. See col.8, lines 66-67.

The Examiner has responded that neither Zhu nor Suzuki were used to teach the solvents but rather the styrene-maleic anhydride binder and firing frequency of 10 kHz or higher. The Examiner is reminded that each reference must be considered as a whole, and thus, the Examiner cannot merely pick the teachings that help in establishing their position, and ignore the teachings that would rebut the case of obviousness. This being said, in order to achieve the firing frequency of Suzuki, the addition of glycerin and ethylene urea is required. Therefore, as previously argued, the combination cited by the Examiner would necessarily contain 5 solvents. The Examiner uses Parazak and Suzuki (a 5 solvent combination) with a reference that effectively teaches away from the use of organic solvents by limiting solvents to “small amounts.” The Examiner alleges that the combination of references has solvent concentrations that overlap each other as well overlapping the present invention and therefore Zhu does not teach away. However, the Examples of Zhu show an organic solvent concentration of 1.5 wt% (N-methyl-2-Pyrrolidone), which also correlates to the disclosed preferred organic solvent range of 1 wt% to 5 wt%. See col. 9, lines 4-6. Therefore, the Applicant contends that, when viewing Zhu as a whole, Zhu effectively teaches away from the Parazak and Suzuki combination.

As the Applicant has raised the issue of teaching away, the Applicant would like to review the current case law regarding teaching away for the Examiner’s convenience. The Court of Appeals for the Federal Circuit has clearly stated that “an applicant may rebut a prima facie case of obviousness by showing that the prior art teaches away from the claimed invention in any material respect.” In re Petersen, 315 F.3d 1325, 1331 (Fed. Cir. 2003). The Court has also stated that “[w]e have noted elsewhere, as a ‘useful general rule,’ that references that teach away cannot serve to create a prima facie case of obviousness.” (emphasis added) McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354 (Fed. Cir. 2001). In identifying the appropriate standard for teaching away, the Court has further stated:

“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be **discouraged from following the path set out in the reference**, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, **a reference will teach away if it suggests that the line of development** flowing from

the reference's disclosure **is unlikely to be productive** of the result sought by the applicant.” (emphasis added) In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

As Zhu teaches away from the concentration of solvents that are required under the present combination of references, the Applicant submits that such a combination is improper and does not establish a *prima facie* case of obviousness. Therefore, for the above reasons, the Applicant respectfully requests that these rejections be withdrawn.

Claims 21-26 and 28-29

The Examiner has used a minimum combination of Parazak and Zhu to reject claims 21-26 and 28-29. Even though the claims recite an ink capable of being fired at frequencies along the entire range of 3 kHz to 25 kHz, the Applicant wishes to address the argument put forth by the Examiner that the Zhu and Parazak combination has a similar inherent range. It should be pointed out that, even under this theory, such a combination is improper, does not teach and every element of the compositional claims, and could only be made by impermissible hindsight.

The Examiner has relied solely upon Parazak and Zhu in rejecting independent claim 21, alleging that the combination of Parazak and Zhu teach all the elements of the instant ink composition and therefore the ink would be inherently jettable at a firing frequency from 3 kHz to 25 kHz.

The Examiner has searched the prior art, found the elements of former independent claim 21 and subsequent dependent claims and alleged that the present compositional claims are therefore obvious. The Applicant concedes that the compositional components of the present ink composition have been used prior to the present invention. Furthermore, the Applicant submits that a vast majority of patents contain materials that are well known in their respective fields. The inquiry for patentability is not the known use of the individual elements, but whether the present combination of elements was obvious at the time of the invention.

In the present combination, the Examiner has chosen one specific polymer from a list of polymers in a secondary reference. Nothing in Parazak suggests that a styrene-maleic copolymer would be particularly useful for high speed printing or for ink compositions in general. Also, as previously discussed, the Examiner is combining the

Zhu reference that generally teaches away from the use of solvents in any quantity, other than small amounts, with the Parazak reference that teaches the use of a three solvent system in concentrations of over 20%.

In the subsequent dependent claims, the Examiner also picks other elements from other references and combines them with Parazak and Zhu alleging that those claims are also obvious. However, nothing in Parazak suggests the use of ammonium benzoate, as in claim 25, or trishydroxymethylaminomethane, as in claim 29. The Examiner is simply piecing together the present invention from as many as 5 different references. The Applicant submits that the only way this combination could be made is with impermissible hindsight.

In fact, one skilled in the art, present with the task of creating a high speed printing ink, would certainly not start with Zhu or Parazak as a primary teaching reference since neither Parazak nor Zhu teach anything about high speed printing. The Applicant would further like to clarify an additional point in regards to the Examiner's "intrinsic" or inherent argument. The Examiner has taken the position that the once the present composition has been shown through a combination, the composition must be intrinsically jettable at the disclosed frequencies. However, the present application has listed the printing frequencies as required elements of the compositional claims. In other words, the Applicant has used the frequencies to further limit the scope of the present claim set. For example, if an ink was disclosed within the compositional ranges of the claim set, but was not printable throughout the entire 3 kHz to 25 kHz range, the ink would not be covered by the claim. Similarly, a combination of prior art that discloses an ink within the compositional ranges of the claim set, but is not printable at from 3 kHz to 25 kHz, cannot make the ink obvious, since the printing frequency is a required component of the composition. In short, the Applicant has discovered a unique ink composition capable of being printed from 3 kHz to 25 kHz, i.e. very low to very high printing frequencies.

The Examiner has responded in agreement that an ink within the disclosed compositional ranges that was not printable at a frequency range of 3 kHz through 25 kHz would not be covered by the claim. However, the Examiner alleges that the present combination would be intrinsically jettable at the claimed frequencies. Additionally, the

Examiner requests clarification as to how the present combination, which allegedly discloses ink as presently claimed, would not meet the requirements of the present claim.

To clarify, the Applicant submits that the present combination fails to teach all of the elements of the present claim set since the combination is missing at least the last element of the claim, i.e., the 3 kHz to 25 kHz printing frequency. In other words, the Applicant has conceded that not all inks within the compositional ranges are printable over these frequencies. Therefore, it is not enough to show the compositional elements since not all inks would still be printable over the entire range. The Examiner must also show the last element, i.e., the printing frequency, which is not a function of the composition but rather a limitation on the combination.

In view of the fact that Zhu generally teaches away from Parazak, the combination of Zhu and Parazak is based on impermissible hindsight, and the combination of Parazak and Zhu does not provide each and every element of the pending claim set, the Applicant respectfully requests that the current rejections be withdraw.

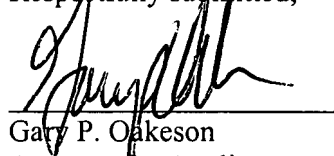


Applicants believe that claims 1-6, 8-9, 11-19, 21-26, and 28-29 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains, and such impediment could be resolved during a telephone interview, the Examiner is invited to telephone the assignee's counsel, W. Bradley Haymond at (541) 715-0159, or the undersigned, so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 18<sup>th</sup> day of May, 2007.

Respectfully submitted,



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